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SOAP AND DETERGENT MANUFACTURING CATEGORY

Application of Standards of Performance for New Sources to Pretreatment Standards for Incompatible Pollutants

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 417]

[FRL 334-4]

SOAP AND DETERGENT MANUFACTURING CATEGORY

Application of Standards of Performance for New Sources to Pretreatment Standards for Incompatible Pollutants

Notice is hereby given pursuant to section 307(c) of the Federal Water Pollution Control Act, as amended (the Act) 33 U.S.C. 1317(c); 86 Stat. 816 et seq.; Pub. L. 92-500, that the proposed regulation set forth below concerns the revision of pretreatment standards for new sources. The proposal will supplant portions of 40 CFR 417—Soap and Detergent Manufacturing Point Source Category, establishing for the manufacture of spray dried detergents subcategory (Subpart O), the manufacture of liquid detergents subcategory (Subpart P), the manufacture of detergents by dry blending subcategory (Subpart Q), and the manufacture of drum dried detergents subcategory (Subpart R), therein the standards of pretreatment for new sources which discharge to publicly owned treatment works. The regulation is intended to be complementary to the general regulation for pretreatment standards for existing sources set forth at 40 CFR 128. This general regulation was proposed July 19, 1973 (39 FR 19236), and published in final form on November 8, 1973 (38 FR 30982).

The general pretreatment standard considers pollutants discharged by users of publicly owned treatment works in the two broad categories compatible and incompatible. Compatible pollutants generally are not subject to Federal pretreatment standards; however 40 CFR 128.131 (Prohibited Wastes) may be applicable to compatible pollutants. Additionally, local pretreatment requirements may apply (See 40 CFR 128.110). Incompatible pollutants generally are subject to pretreatment standards as provided in 40 CFR 128.133.

In compliance with section 307(c), pretreatment standards for new sources were incorporated in the regulations promulgated under 40 CFR 417—Soap and Detergent Manufacturing Point Source Category on April 12, 1974 (39 FR 13370) as §§ 417.16, 417.26, 417.36, 417.46, 417.56, 417.66, 417.76, 417.86, 417.96, 417.106, 417.116, 417.126, 417.136, 417.146, 417.156, 417.166, 417.176, 417.186, and 417.196. The potential presence of incompatible pollutants (i.e., refractory organic materials) in waste waters associated with the production of industrial and institutional detergents was recognized for Subparts O, P, Q, and R. New source pretreatment standards in the form of limitations on the discharge of COD, and based on the best information and data available at the time, were included in §§ 417.156, 417.166, 417,176, and 417.186 to control discharge of refractory organic materials to publicly owned treatment works.

Subsequent to the promulgation of regulations under 40 CFR 417, an appreciable body of information and data has been received indicating that a technically sounder basis for pretreatment standards for this industry can be developed utilizing parameters and limitations other than those specified in the promulgated regulations. This new basis will neither unduly penalize the discharge of degradable organic materials nor permit discharge of excessive amounts of refractory organic materials to publicly owned treatment works. A brief summary of the points raised in the comments received and the supporting body of information and data is as follows:

(1) The intent of the pretreatment standard is to control the discharge of pollutants to publicly owned treatment works, which pollutant may interfere with, pass through or otherwise be incompatible with such works. Hence, the parameters to be considered and the limitations to be applied should be addressed to the discharge stream, not to the finished products. Moreover, the COD to BOD ratio of the discharge stream may differ radically from that of the finished products, since, due to the nature of the operations in the affected subcategories, the amounts of various materials in the wastewater discharge may not be proportional to their content in finished products.

(2) The five-day biochemical oxygen demand and a COD to BOD5 ratio of 4.0 to 1.0 are not reliable parameters for indicating the susceptibility of many organic materials employed in the affected subcategories to degradation and removal in biological treatment plants and thus are not appropriate for defining pollutants in pretreatment standards for discharge to publicly owned treatment works. This position is supported by an extensive body of data submitted on groups of compounds employed as industrial surfactants that were suspect in regard to biodegradability (e.g., ethoxylated phenols and ethoxylated modified alcohols).

The data indicate that for certain organic materials employed in the soap and detergent industry, there may be a lag in the exertion of oxygen demand in the BOD test. The now available data indicate that applicability of biochemical oxygen demand determinations can be improved substantially and the effects of lag largely eliminated by using acclimated seed and extending the incubation period to 7 days.

Based on the COD/BOD7 ratios of a number of ethoxylated phenols and alcohols for which both bench scale and actual plant treatment data show reductions ranging from 90.5 to 97.0 percent (standard errors of 1.4–3.4 percent), and on statistical analysis of the variability of COD and BOD determinations, a COD/BOD7 ratio of 10 to 1, or less, would indicate materials which would be expected to undergo satisfactory reduction in well designed and operated publicly owned treatment works. The mean COD/BOD7 ratios of the individual ethoxylated phenols and alcohols referred to range from 2.5 to 7.5. Statistical analysis of the variability of COD and BOD5 determinations results in a coefficient of variability of approximately plus or minus 22 percent for the COD/BOD5 ratio. Thus, the 95 percent upper confidence limit is obtained by multiplying the mean COD/BOD5 by a factor of approximately 1.4. While sufficient data are not available for a corresponding statistical analysis of BOD7 determinations employing acclimated seed, with the greater consistency expected for this procedure a COD/BOD7 ratio of 10 to 1 should exceed the 95 percent upper confidence limit associated with a mean COD/BOD7 ratio of 7.5.

In marked contrast to the foregoing, information submitted in regard to ethoxylated materials conceded to be virtually nondegradable in conventional biological treatment works shows COD/BOD7 ratios in the range of 75 to 150 to 1. Even if the incubation period is extended to 18 days the COD/BOD ratios remain substantially in excess of 10 to 1.

In the design and construction of new sources there are many possibilities for incorporation of measures to eliminate waste discharges that may not be available to existing sources. Typical of such measures would be the installation of a sufficient number of holding tanks to receive the wastes associated with all major products for recycle into process. Reasonable use of in-plant controls, especially where formulations containing larger amounts of refractory organic materials are involved, will significantly reduce raw waste loads; thus, the discharge of raw wastes with a COD to BOD7 ratio greater than 10 and COD loads in excess of those contained in the regulation proposed herewith, which represent approximately 30 percent reduction of typical raw waste loads, is representative of inadequate in-plant control and pretreatment should be employed to prevent excessive pass-through of refractory organic materials discharged to publicly owned treatment works.

After careful review and evaluation of all available information and data relevant to the discharge of waste waters of the soap and detergent manufacturing industry to publicly owned treatment works, the Environmental Protection Agency (EPA or Agency) proposes to modify the pretreatment standards for new sources in the industry along the following lines:

(1) The parameters and limitations will be referenced to the discharge stream from the affected source within a subcategory, not to the finished products.

(2) The requirements for pretreatment will be defined in terms of COD/BOD7 of the discharge streams; those with COD/BOD7 ratios greater than 10 and COD content above specified levels requiring pretreatment prior to discharge to publicly owned treatment works.

It is not anticipated that these modifications will alter either the technology required for compliance or the economic

impact set forth in the EPA reports entitled "Economic Analysis of Proposed Guidelines, Soap and Detergent Manufacturing" (December 1973) and "Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Soap and Detergent Manufacturing Point Source Category" (April 1974).

All comments and documentation basic to the proposed modification of the pretreatment standards for new sources subject to 40 CFR 417 will be maintained for inspection and copying during the comment period at the EPA Freedom of Information Center, Room 204, West Tower, Waterside Mall, 401 M Street SW., Washington, D.C. Copies of the Development Document and the economic report will also be available for inspection at EPA regional offices and at State water pollution control agency offices. Copies of the Development Document may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Copies of the economic analysis report are available for purchase through the National Technical Information Service, Springfield, Virginia 22151.

Interested persons may participate in this rulemaking by submitting written comments in triplicate to the EPA Office of Public Affairs, Environmental Protection Agency, Washington, D.C. 20460. Attention: Ms. Ruth Brown, A-107. Comments on all aspects of the proposed regulations are solicited. In the event comments are in the nature of criticisms as to the adequacy of data which are available, or which may be relied upon by the Agency, comments should identify and, if possible, provide any additional data which may be available and should indicate why such data are essential to the development of the regulations. In the event comments address the approach taken by the Agency in establishing pretreatment standards for new sources, EPA solicits suggestions as to what alternative approach should be taken and why and how this alternative better satisfies the detailed requirements of section 307(c) of the Act.

A copy of all public comments will be available for inspection and copying at the EPA Freedom of Information Center, Room 204, West Tower, Waterside Mall, 401 M Street SW., Washington, D.C. The EPA information regulation, 40 CFR Part 2, provides that reasonable fee may be charged for copying. All comments received on or before March 24, 1975 will be considered.

In consideration of the foregoing, it is hereby proposed that 40 CFR 417 be amended by adding a definition for BOD7 to §§ 417.151, 417.161, 417.171 and 417.181, and by deleting the existing §§ 417.156, 417.166, 417.176, and 417.186 and substituting new §§ 417.156, 417.166, 417.176, and 417.186.

Dated: February 10, 1975.

RUSSELL E. TRAIN,
Administrator.

Part 417 is proposed to be modified as follows:

Subpart O—Manufacture of Spray Dried Detergents Subcategory

1. Section 417.151 is amended by adding a new paragraph (g) to read as follows:

§ 417.151 Specialized definitions.

* * * * *

(g) The term BOD7 shall mean the biochemical oxygen demand as determined by incubation at 20 degrees C for a period of 7 days using an acclimated seed. Agitation employing a magnetic stirrer set at 200 to 500 rpm may be used.

2. The existing § 417.156 is replaced to read as follows:

§ 417.156 Pretreatment standards for new sources.

The pretreatment standards under section 307(c) of the Act for a new source within the manufacture of spray dried detergents subcategory which is a user of a publicly owned treatment works and a major contributing industry as defined in 40 CFR 128 (and which would be a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the same standard as set forth in 40 CFR 128, for existing sources, except that, for the purpose of this section, 40 CFR 128.121, 128.122, 128.132, and 128.133 shall not apply. The following pretreatment standard establishes the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged to a publicly owned treatment works by a new source subject to the provisions of this subpart.

(a) For waste streams having a ratio of COD to BOD7 of 10.0 or less or for waste streams having a COD content of 2.40 kg/kkg of anhydrous product or less the pretreatment standard shall be:

(1) For normal operation of spray drying towers above, the following values pertain:

Pollutant or pollutant property:	*Pretreatment standard*
BOD5	No limitation.
COD	Do.
TSS	Do.
Surfactants	Do.
Oil and grease	Do.
pH	Do.

(2) For air quality restricted operation of a spray drying tower, but only when a high rate of wet scrubbing is in operation which produces more waste water than can be recycled to process, the following values pertain:

Pollutant or pollutant property:	*Pretreatment standard*
BOD5	No limitation.
COD	Do.
TSS	Do.
Surfactants	Do.
Oil and grease	Do.
pH	Do.

(3) For fast turnaround operation of a spray tower, the following values pertain: The maximum for any one day when the number of turnarounds exceeds six in any particular thirty consecutive day. period shall be the sum of the appropriate value below and that from paragraph (1) or (2) of this section; and the average of daily values for thirty consecutive days shall be the value shown below multiplied by the number of turnarounds in excess of six and prorated to thirty days plus the appropriate value from paragraph (1) or (2) of this section.

Pollutant or pollutant property:	*Pretreatment standard*
BOD5	No limitation.
COD	Do.
TSS	Do.
Surfactants	Do.
Oil and grease	Do.
pH	Do.

(b) For waste streams having a ratio of COD to BOD7 greater than 10.0 and a COD content of more than 2.40 kg/kkg of anhydrous product the pretreatment standard shall be:

(1) For normal operation of spray drying towers as defined above, the following values pertain:

Pollutant or pollutant property	Pretreatment standards: Maximum for any one day	Pretreatment standards: Average of daily values for thirty consecutive days shall not exceed—
(Metric units) kg/kkg of anhydrous product		
COD	0.08	0.04
Surfactants	No limitation	
Oil and grease	No limitation	
BOD5	No limitation	
TSS	No limitation	
pH	No limitation	
(English units) lb/1000 lb of anhydrous product		
COD	0.08	0.04
Surfactants	No limitation	
Oil and grease	No limitation	
BOD5	No limitation	
TSS	No limitation	
pH	No limitation	

(2) For air quality restricted operation of a spray drying tower, but only when a high rate of wet scrubbing is in operation which produces more waste water than can be recycled to process, the following values pertain:

Pollutant or pollutant property	Pretreatment standards: Maximum for any one day	Pretreatment standards: Average of daily values for thirty consecutive days shall not exceed—
(Metric units) kg/kkg of anhydrous product		
COD	0.50	0.25
Surfactants	No limitation	
Oil and grease	No limitation	
BOD5	No limitation	
TSS	No limitation	
pH	No limitation	
(English units) lb/1000 lb of anhydrous product		
COD	0.50	0.25
Surfactants	No limitation	
Oil and grease	No limitation	
BOD5	No limitation	
TSS	No limitation	
pH	No limitation	

(3) For fast turnaround operation of a spray tower, the following values pertain: the maximum for any one day when the number of turnarounds exceeds six in any particular thirty consecutive day period shall be the sum of the appropriate value below and that from paragraph (a) or (b) of this section; and the average of daily values for thirty consecutive days shall be the value shown below multiplied by the number of turnarounds in excess of six and prorated to thirty days plus the appropriate value from paragraph (1) or (2) of this section.

Pollutant or pollutant property:	*Pretreatment standards*
(Metric units) kg/kkg of anhydrous product	
COD	0.07.
Surfactants	No limitation.
Oil and grease	Do.
BOD5	Do.
TSS	Do.
pH	Do.
(English units) lb/1000 lb of anhydrous product	
COD	0.07.
Surfactants	No limitation.
Oil and grease	Do.
BOD5	Do.
TSS	Do.
pH	Do.

Subpart P—Manufacture of Liquid Detergents Subcategory

3. Section 417.161 is amended by adding a new paragraph (f) to read as follows:

§ 417.161 Specialized definitions.

* * * * *

(f) The term BOD7 shall mean the biochemical oxygen demand as determined by incubation at 20 degrees C for a period of 7 days using an acclimated seed. Agitation employing a magnetic stirrer set at 200 to 500 rpm may be used.

4. The existing § 417.166 is replaced to read as follows:

§ 417.166 Pretreatment standards for new sources.

The pretreatment standards under section 307(c) of the Act for a new source within the manufacture of liquid detergents subcategory which is a user of a publicly owned treatment works and a major contributing industry as defined in 40 CFR 128 (and which would be a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the same standard as set forth in 40 CFR 182, for existing sources, except that, for the purpose of this section, 40 CFR 128.121, 128.122, 128.132, and 128.133 shall not apply. The following pretreatment standard establishes the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged to a publicly owned treatment works by a new source subject to the provisions of this subpart.

(a) For waste streams having a ratio of COD to BOD7 of 10.0 or less or for waste streams having a COD content of 1.10 kg/kkg of anhydrous product or less the pretreatment standard shall be:

(1) For normal liquid detergent operations the following values pertain:

Pollutant or pollutant property:	*Pretreatment standard*
BOD5	No limitation.
COD	Do.
TSS	Do.
Surfactants	Do.
Oil and grease	Do.
pH	Do.

(2) For fast turnaround operation of automated fill lines, the following values pertain; the maximum for any one day when the number of turnarounds exceeds eight in any thirty consecutive day period shall be the sum of the appropriate value below and that from paragraph (1) of this section; and the average of daily values for thirty consecutive days shall be the value shown below multiplied by the number of turnarounds in excess of eight and prorated to thirty days plus the appropriate value from paragraph (1) of this section:

Pollutant or pollutant property:	*Pretreatment standard*
BOD5	No limitation.
COD	Do.
TSS	Do.
Surfactants	Do.
Oil and grease	Do.
pH	Do.

(b) For waste streams having a rate of COD to BOD7 greater than 10.0 and a COD content of more than 1.10 kg/kkg of anhydrous product the pretreatment standard shall be:

(1) For normal liquid detergent operations the following values pertain:

Pollutant or pollutant property	Pretreatment standards: Maximum for any one day	Pretreatment standards: Average of daily values for thirty consecutive days shall not exceed—
(Metric units) kg/kkg of anhydrous product		
COD	0.44	0.22
Surfactants	No limitation	
Oil and grease	do	
BOD5	do	
TSS	do	
pH	do	
(English units) lb/1000 lb of anhydrous product		
COD	0.44	0.22
Surfactants	No limitation	
Oil and grease	do	
BOD5	do	
TSS	do	
pH	do	

(2) For fast turnaround operation of automated fill lines, the following values pertain: the maximum for any one day when the number of turnarounds exceeds eight in any thirty consecutive day period shall be the sum of the appropriate value below and that from paragraph (a) of this section; and the average of daily values for thirty consecutive days shall be the value shown below multiplied by the number of turnarounds in excess of eight and prorated to thirty days plus the appropriate value from paragraph (a) of this section:

Pollutant or pollutant property:	*Pretreatment standards*
(Metric units) kg/kkg of anhydrous product	
COD	0.07.
Surfactants	No limitation
Oil and grease	Do.
BOD5	Do.
TSS	Do.
pH	Do.
(English units) lb/1000 lb of anhydrous product	
COD	0.07.
Surfactants	No limitation
Oil and grease	Do.
BOD5	Do.
TSS	Do.
pH	Do.

Subpart Q—Manufacture of Detergents by Dry Blending Subcategory

5. Section 417.171 is amended by adding a new paragraph (d) to read as follows:

§ 417.171 Specialized definitions.

* * * * *

(d) The term BOD7 shall mean the biochemical oxygen demand as determined by incubation at 20 degrees C for a period of 7 days using an acclimated seed. Agitation employing a magnetic stirrer set at 200 to 500 rpm may be used.

6. The existing § 417.176 is replaced to read as follows:

§ 417.176 Pretreatment standards for new sources.

The pretreatment standards under section 307(c) of the Act for a new source within the manufacture of detergents by dry blending subcategory which is a user of a publicly owned treatment works and a major contributing industry as defined in 40 CFR 128 (and which would be a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the same standard as set forth in 40 CFR 128, for existing sources, except that, for the purpose of this section, 40 CFR 128.121, 128.122, 128.132, and 128.133 shall not apply. The following pretreatment standard establishes the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged to a publicly owned treatment works by a new source subject to the provisions of this subpart.

(a) For waste streams having a ratio of COD to BOD7 of 10.0 or less or for waste streams having a COD content of 0.26 kg/kkg of anhydrous product or less the pretreatment standard shall be:

Pollutant or pollutant, property:	*Pretreatment standard*
BOD5	No limitation.
COD	Do.
TSS	Do.
Surfactants	Do.
Oil and grease	Do.
pH	Do.

(b) For waste streams having a ratio of COD to BOD7 greater than 10.0 and a COD content of more than 0.26 kg/kkg of anhydrous product the pretreatment standard shall be:

Pollutant or pollutant property	Pretreatment standards: Maximum for any one day	Pretreatment standards: Average of daily values for thirty consecutive days shall not exceed—
(Metric units) kg/kkg of anhydrous product		
COD	0.14	0.07
Surfactants	No limitation	
Oil and grease	do	
BOD5	do	
TSS	do	
pH	do	
(English units) lb/1000 lb of anhydrous product		
COD	0.14	0.07
Surfactants	No limitation	
Oil and grease	do	
BOD5	do	
TSS	do	
pH	do	

Subpart R—Manufacture of Drum Dried Detergents Subcategory

7. Section 417.181 is amended by adding a new paragraph (d) to read as follows:

§ 417.181 Specialized definitions.

* * * * *

(d) The term BOD7 shall mean the biochemical oxygen demand as determined by incubation at 20 degrees C for a period of 7 days using an acclimated seed. Agitiation employing a magnetic stirrer set at 200 to 500 r.p.m. may be used.

8. The existing § 417.186 is replaced to read as follows:

§ 417.186 Pretreatment standards for new sources.

The pretreatment standards under section 307(c) of the Act for a new source within the manufacture of drum dried detergents subcategory which is a user of a publicly owned treatment works and a major contributing industry as defined in 40 CFR 128 (and which would be a new source subject to section 306 of the Act, if it were to discharge pollutants to the navigable waters), shall be the same standard as set forth in 40 CFR 128, for existing sources, except that, for the purpose of this section, 40 CFR 128.121, 128.122, 128.132, and 128.133 shall not apply. The following pretreatment standard establishes the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged to a publicly owned treatment works by a new source subject to the provisions of this subpart.

(a) For waste streams having a ratio of COD to BOD7 of 10.0 or less or for waste streams having a COD content of 0.20 kg/kkg of anhydrous product or less the pretreatment standard shall be:

Pollutant or pollutant property:	*Pretreatment standard*
BOD5	No limitation
COD	Do.
TSS	Do.
Surfactants	Do.
Oil and grease	Do.
pH	Do.

(b) For waste streams having a ratio of COD to BOD7 greater than 10.0 and a COD content of more than 0.20 kg/kkg of anhydrous product the pretreatment standard shall be:

Pollutant or pollutant property	Pretreatment standards: Maximum for any one day	Pretreatment standards: Average of daily values for thirty consecutive days shall not exceed—
(Metric units) kg/kkg of anhydrous product		
COD	0.10	0.05
Surfactants	No limitation	
Oil and grease	do	
BOD5	do	
TSS	do	
pH	do	
(English units) lb/1000 lb of anhydrous product		
COD	0.10	0.05
Surfactants	No limitation	
Oil and grease	do	
BOD5	do	
TSS	do	
pH	do	

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